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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,042	02/06/2004	Chien-Min Sung	22390.CIP	9003
20551	7590	10/16/2006		
THORPE NORTH & WESTERN, LLP. 8180 SOUTH 700 EAST, SUITE 200 SANDY, UT 84070			EXAMINER NGUYEN, THUKHANH T	
			ART UNIT	PAPER NUMBER

1722

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,042

Applicant(s)

SUNG, CHIEN-MIN

Examiner

Thu Khanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 25-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies (5,772,756).

Davies discloses an apparatus for producing diamond crystal growth on a seed crystal, comprises a plurality of walls (12, 14) forming a high pressure chamber (10), crystal diamond seeds (24), a metallic catalyst/solvent (18) in communication with the seeds on one side and a layer of raw material such as carbon (20) located adjacent to the catalyst layer and in communicate with the catalyst on the other side (Figs. 1-2).

Davies further discloses that the material inside the HTHP chamber (10) can have different orientations such as placing the diamond seeds perpendicular to the catalyst layer or the gravity so that the dominant growth on the re-entrant surface of the catalyst layer can occur (col. 2, lines 37-51), wherein the chamber (10) is placed in a HTHP apparatus during the process (col. 3, lines 27-30).

However, Davies fails to disclose that the raw material layer is located to diffuse into the catalyst layer in a direction that is perpendicular to gravity.

First of all, the material or the orientation of the material being working on by the apparatus cannot be used to determine the patentability of an apparatus claim. "Expressions

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relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim.” *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, “[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims.” *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). MPEP § 2115.

Secondly, even when the material is important in a system claim, Davies discloses all the claimed material inside the HTHP chamber in order to grow diamond crystal. The orientation of the material can not be used to determine the patentability of the claims when it does not affect the structure of the apparatus. It has been held that by merely shifting the position of the parts without changing the operation of the mechanism will not render the claims patentable and the placement of the mechanism is an obvious matter of design choice. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

In regard to claims 2-8, the apparatus further comprise a second catalyst layer (22) located on the other side of the raw material layer. Again, the material being worked upon cannot be used to determine the patentability of an apparatus claim. On the other hand, it would also have been obvious to one of ordinary skill in the art to provide additional layers of material or rearrange the material layers so that the crystal can grow properly.

In regard to claims 9-16, Davies discloses that the raw material is carbon, the catalyst/solvent is a mass of metallic catalyst/solvent that is well known in the art (col. 1, lines 14-29) such as cobalt/iron/nickel or an alloy thereof (col. 2, lines 55-59), and the crystal seeds are one or more diamond seeds (col. 2, lines 37-48).

Because the type and the arrangement of the material inside the mold cavity does not further define the structure of the apparatus, these limitations cannot be used to determine the patentability of the apparatus claims. Further, the type of the material being used in the press will depend on the desired product. One of ordinary skill in the art would have been motivated to select the right material for the right product. How the material is arranged in a mold cavity would also depend on the property of the material, the desired size, shape, and properties of the product. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re *Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (Emphasis in original)

3. Claims 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies ('756) as applied to claims 1-17 above, and further in view of Bundy et al (3,179,979).

Davies discloses a diamond synthesis apparatus as described above, in which a plurality of material are contained inside a chamber which is placed in the reaction zone of a high temperature and high pressure apparatus for growing crystal (col. 3, lines 27-30).

However, Davies fails to disclose that the HTHP apparatus is a split die device.

Bundy discloses a high pressure die, comprising a plurality of arcuate complementary die segments (13-18) forming a horizontally oriented cavity (12), a pair of anvils, or punch members (47), and a plurality of piston cylinder (36, 37), corresponding to the force members for controlling the movement of the die segments (col. 3, lines 3-20), wherein the die can have up to

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six segments that are tapered toward the center of the cavity (Fig. 2, 15-18), wherein the die segments are supported by a plurality of ram segments (27-32), wherein each ram segment having a contour surface contacting the die segments (Fig. 1, 33) to reduce the tensile stress on the die segments (col. 4, lines 6-12), wherein the pair of punch are frustoconical anvils (col. 3, lines 53-56).

Bundy et al fail to disclose the dimensions of the mold chamber, the diamond seed and the catalyst material.

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Davies by providing a split mold with a plurality die segments and appropriate die cavity as taught by Bundy because the high pressure split die would provide a high pressure reaction zone necessary for growing diamond crystal.

Response to Arguments

4. Applicant's arguments filed August 25, 2006 have been fully considered but they are not persuasive.

The Applicants repeatedly argued that the prior art fails to teach or suggest that the material layer is oriented perpendicular to the gravity. However, this limitation is the intended use of the apparatus. It has been held that a functional limitation asserted to be critical for establishing novelty may, in fact, be an inherent characteristic of the prior art. The applicants is required to prove that the subject matter shown in the prior art does not necessarily possess the characteristics relied on. *In re Schreiber*, 128 F. 3d 1473, 1478, 44 USPQ 2d, 1432 (Fed. Cir. 1997); See also, *In re Spada*, 911 F 2d 705, 708, 15 USPQ 2d 1655, 1658 (Fed. Cir. 1977); *In re*

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Best, 562 F. 2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); and *Ex Parte Gray*, 10 USPQ 2d 1922, 1925 (Bd. Pat. App. & Int. 1989). In this case, the Applicants have failed to provide evident that Bundy is incapable to operate when the material are placed vertically and perpendicular to the direction of gravity.

Further, a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). “Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim.” *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, “[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims.” *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). MPEP § 2115.

Even when the material being working on is considered part of the system, Davies does discloses each and every material that has been claimed and are necessary for growing diamond crystal. This reference furthers discloses that the crystal seeds are located perpendicular to the catalyst layer and that other orientations for the material inside the pressure chamber are possible (col. 2, lines 37-51). Therefore, it would have been obvious to one of ordinary skill in the art to arrange the material inside the pressure chamber properly in order for crystal growing to occur. It has been held that by merely shifting the position of the parts without changing the operation of the mechanism will not render the claims patentable and the placement of the mechanism is an

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obvious matter of design choice. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Khanh T. Nguyen whose telephone number is 571-272-1136. The examiner can normally be reached on Monday- Friday, 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gupta Yogendra can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



TN
10/11/06